desert flora DESIGN

city of palm desert landscape design manual

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Table of Contents

I. INTRODUCTION

Landscape is a key element in the definition and preservation of a city's character. The commitment to retain the unique aesthetic standards of the desert has long been a vision of the City of Palm Desert. Progressive environmental programs, many of which are the first of their kind in the region, are firmly established in the City. In order to uphold the distinctive beauty of the City's scenery, an exceptional environmental approach is necessary.

To meet this goal, the City has set standards to promote preservation and conservation, as evidenced in its water efficiency programs, as well as its, energy conservation and recycling efforts. Promoting and following the principles offered in this Landscape Design Manual will make lasting aesthetic and sustainable contributions to the community.

II. PURPOSE

The purpose of the Landscape Design Manual is to supply guidelines for creating appealing, enduring, and desert-appropriate landscapes while remaining mindful of water conservation principles and the effects of microclimate on the environment. The manual is written to assist landscape architects, irrigation designers, contractors, project planners, and the public in the design of a successful landscape plan that will be sustainable, have a high aesthetic value, and be efficiently reviewed and permitted by the City's departments.

The Landscape Design Manual is intended to be applied to Single-Family Master Plan, Multi-Family, Commercial, Mixed Use, and Industrial developments. The manual is also intended to assist applicants who wish to renovate and retrofit existing landscape on their property.

III. ORGANIZATION

The Landscape Design Manual is organized into three main sections: Desert Landscape Design Principles, Design Process, and the City Approval Process. The manual also includes a glossary for reference on terminology and an appendix containing an illustrated background of the City's environment. Finally, a reference list of landscape-related City ordinances is included.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria

Part one of the manual, Desert Landscape Design Principles, includes a description of five Design Criteria against which all plans for proposed landscape construction will be evaluated. Meeting the following Design Criteria provides sufficient basis for a successful planting design:

(1) Texture
(2) Movement
(3) Color
(4) Placement
(5) Inorganics

Each of the above criteria is described in further detail in the pages that follow. Examples of how to successfully satisfy the criteria are offered. To gain approval, a design must use an effective combination of all design criteria, and must additionally comply with all aspects of the Water Usage, Parking Lot and Shade Tree ordinances. A list of applicable City landscape-related ordinances is included in the Appendix.

Good design employs: a variety of textures; three-dimensional movement; color; naturalistic placement of plant material; and a variety of inorganic materials, including cobble and boulders.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

Photographs are provided to define the five “Design Criteria” and further illustrate how to successfully incorporate these criteria into a successful and sustainable landscape. The Landscape Design Manual recommends that plant material be native to the desert or be climate adapted. The City’s Desert Flora Palette booklet and other regional plant material lists are excellent sources for plant and tree opyions.

Following the “Design Criteria” section, a section to discuss the use of “Plant Materials” in design is included. Specification of trees, shrubs and groundcovers are reviewed not only for their success in meeting the five “Design Criteria”, but also for the way in which they are designed to fit within the physical limitations of the built environment, including utilities, streets, sidewalks, and other infrascructure).

This residential landscape design exhibits a variety of plants and inorganic materials arranged to provide color, shade, and interest in a front yard.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(1) Texture

The use of differing textures in outdoor spatial design adds surface variety. Texture can be used to direct the eye toward bold punctuations or soft flowing momentum. Following the principles of coarseness versus fine textures and the principle of loose clustering can help achieve balanced texture.

Coarse vs. Fine textures:

Coarse and fine qualities in the landscape are created by differences in leaf size, in the mass and void of foliage, bulk and narrowness of tree trunks and branches, and strength and size of flowers. As the quantity of light changes throughout the day, textures can be perceived differently. Strong structural pieces such as agave are considered coarse. Bougainvillea, with its contrast of bare bark and sporadic profusion of colored-bracts, is also considered coarse in quality.

Rough, coarse textures tend to create an informal mood and are visually dominant, while fine, smooth textures are associated with formal, elegant, subdued moods and are visually more passive. Fine-textured plants are visually translated as being farther away, so fine textures can be used to create a sense of expanse in a small garden and making the space appear larger.

The course textures of these agave and the adjacent cobble can be appreciated by quickly passing motorists.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(1) Texture continued

The predominance of coarse-textured plants makes a garden space appear smaller. Strong textural contrasts add drama and interest to a garden. Structural plants such as cactus, yucca, agave, and ocotillo interspersed with fine-foliage plants and inorganic materials are ways of adding textural interest to any space.

The fine texture of the plant material contrasts well with the bold shapes of the paving stones, boulders, and architecture of this home.

How to achieve an acceptable level of texture in landscape design:

- Combine plants of differing leaf sizes.
- Utilize plants with differing structural patterns.
- Place coarse plants only in larger landscapes where they can be appreciated from a distance.
- Vary leaf size, growth pattern, seasonal color, etc., and utilize unplanted ground space to accentuate plant selection.

Using a variety of textures in plants and inorganic materials creates an appealing streetscape.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(2) Movement

Movement is measured by the sequence and hierarchy of plant material and inorganic decorative elements as the eye dances over the landscape. Movement refers to the rhythms that can develop when line, form, texture, and color are changed in a consistent way to lead in a particular direction or to a point of focus. Sequence helps connect various design elements. It can be achieved through repetition, being careful to avoid monotony; or by progression or hierarchy, such as using textures in graded steps from fine to coarse; or by alternating or repeating two or more contrasting features; or by highlighting size differences. Topographical changes, including the use of mounds, berms, or swales, can also create a sense of movement.

Focal Points:

The application of focal points in a landscape design conveys a sense of order. It is best achieved by utilizing movement to direct the eye to a specimen tree, sculpture, fountain, or other marker. Plant material focal points are listed as “Accents” in the City’s booklet Desert Flora Palette.

The landscaping here leads the eye to the dramatic architecture of the Henderson Community Building, creating a sense of movement.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(2) Movement continued

Rhythm:

Rhythm implies a recognizable pattern. Whether symmetrical or not, shapes and volumes should convey movement through a rhythmic pattern. For example, as the eye moves through the landscape there should be deliberate reasons for large passages of space and the deliberate spacing may or may not remain consistent.

Sequencing of vertical and horizontal elements:

In order to create three-dimensional movement, a designer should be familiar with the growth patterns of their plant choices. Designers should be able to illustrate how a particular proposed plant community will interact to create a three-dimensional relationship.

How to achieve an acceptable level of Three-Dimensional Movement:

- Specify plant material of differing heights and shapes.
- Utilize color to move the eye.
- Propose an accent plant where appropriate.
- Create patterns with repetition of shapes, or volumes of plants in sequence.
- Artificially enhance soil surface elevations through the use of mounds, berms or swales.

The strong vertical forms of the Ocotillo and Cereus create a sense of rhythm in this landscape display.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(3) Color

The most environmentally successful plantings are those that best align with the existing natural vegetation. Nurseries offer species with a rich color range that complements the hues found in the natural desert environment. The City's Desert Flora Palette booklet and other regional plant lists can help serve as a guide.

Natural desert color palette:

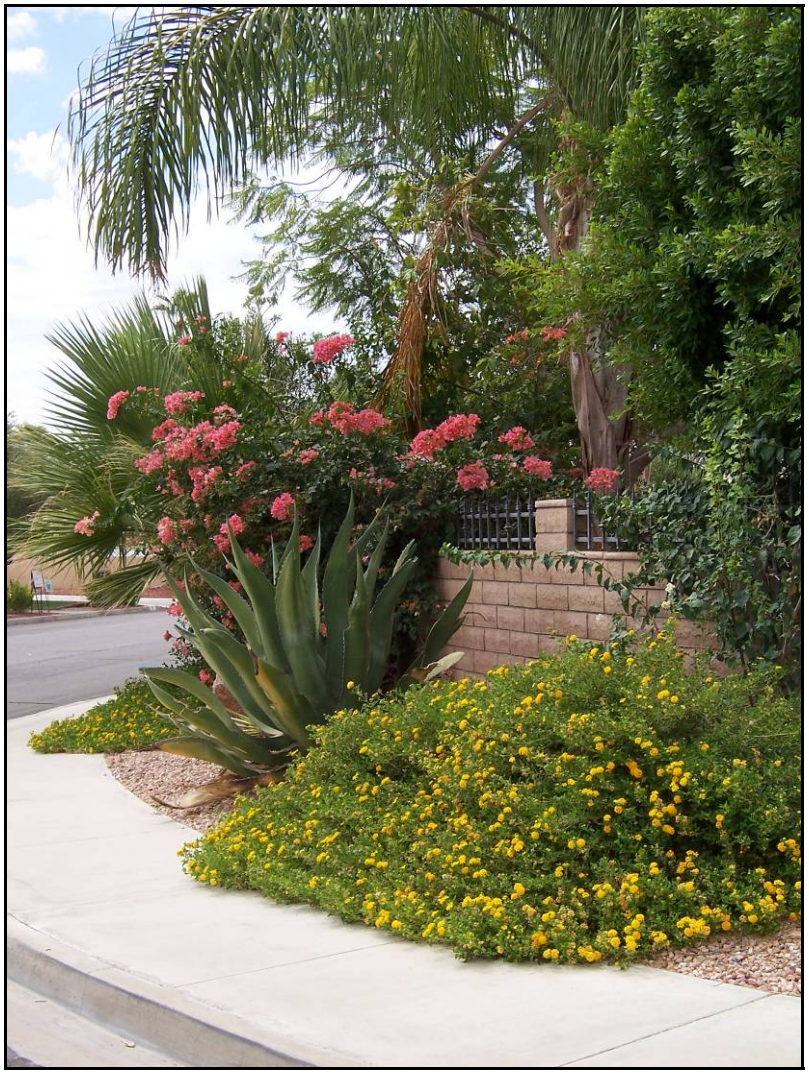
Natural desert foliage or leaf color ranges from gray, gray green to olive and bright green. Succulents can be blue gray to purple. Desert plants typically bloom in red, orange, and yellow. Pink and purple blooms are not as common. Environmentally, the choices for color are most suitable when they are capable of withstanding the climate. Therefore, emulating desert vegetation is the best choice rather than choosing "annual" color from a different, more moderate climate zone.

Dynamic/seasonal:

Design that is consistent with the natural flow of the seasons is the most suitable choice for the desert climate. This means more blooms in the late winter and early spring and fewer in the summer or fall.

Contrast:

Contrasting colors create balance and interest, whereas a single color theme results in an atypical desert arrangement. Sites that are designed with all blooms occurring at the same time are also discouraged.



Vivid color and varying textures create a lively pocket of landscaping.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(3) Color continued

Light and shade effects:

Some colors have greater impact when placed in the shade, while other colors are more intense in the sunlight. It is recommended that the designers know their plant materials sufficiently to underscore color with optimum placement.

How to achieve an acceptable level of color placement

- Color is critical; use it purposefully.
- Consider the **source** of color of the plants specified, i.e., the bark of trees, leaves of shrubs, blooms of perennials, and stems and bodies of succulent plants.
- Design by placing strong colors as accents in the landscape.
- Choose plants for their sequential blooming periods throughout the year.
- Alternate strong and subtle colors.
- Avoid monochromatic palettes unless they are part of a larger design scheme.

Colorful plant material adds visual interest to this median landscaping.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(4) Placement

Placement of plants and inorganic materials defines the landscape design character. Placement can be used to create designs that are formal or informal; symmetrical, asymmetrical, or organic; artificial and contrived or flowing and natural. Elements of placement include plant spacing, massing, and symmetry.

Landscape designs that are informal, natural, and organic in form are encouraged. Designs that are formal or highly structured will be considered on a case-by-case basis, and may be approved where building architecture or site design warrants this approach.

The City of Palm Desert has a long established tradition of environmental sustainability. Successful spacing of plants assures ease of maintenance, longevity, and sustainability in your design. When reviewing landscape plans, the principles of sustainability with respect to maintenance, green waste, and water conservation are priorities. City staff will look for over-all consistency with respect to long-term maintenance of a proposed planting design.

Consider the natural, organic form of plant placement above, compared with the contrived and deliberate patterning shown below.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(4) Placement continued

The desert's natural growth pattern:

The desert's natural growth pattern is characterized by casual clusters of living plants grouped with boulders and cobble. These organic and inorganic clusters can include random large shrubs and mature trees.

In the naturally occurring desert landscape, living plant materials grow out of wide expanses of rocky soils and sand. Occasionally, boulders and other groups of rocks gather in lower spots. This pattern emerges due to gravity's effect on slopes where water drainage and cobble erosion settle.

Loose Clustering:

While the City discourages the landscape design technique of mass planting, or unnatural bulk grouping, (a style more common in wetter climates), the natural pattern of the desert habitat does include the concept of loose clustering of similar species. This concept can add texturally to any design, whether using coarse or fine materials.

The desert's natural growth pattern is celebrated in the landscape design depicted here. Note the expanse of open space punctuated with loose clusters of a variety of species of drought-tolerant plants.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(4) Placement continued

When mass planting is acceptable:

Mass planting will be considered if it serves a clear and unique design purpose that highlights a specific architectural or site feature. Combined mass planted areas should not comprise a large portion of the total landscaped area.

How to achieve an acceptable level of placement:

- Design with random patterns that employ a balanced use of unplanted areas and areas utilizing boulders, living groundcovers, shrubs, and trees.
- When spacing, consider the use of public art, monument signs, meandering walks, or other unnatural materials.
- Design to create easily maintained clusters, and consider plants' mature sizes.
- Preserve areas of negative or unplanted space throughout the design area.
- Locate plant material an adequate distance from sidewalks and structures so that it can grow unrestrained to its full size.
- Use unstructured and irregular placement in lieu of creating artificial or contrived patterns with plants and inorganic materials.

Consideration has been given here to mature plant sizes. These shrubs will not encroach on the sidewalk and can be easily maintained throughout the life of the plant material.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

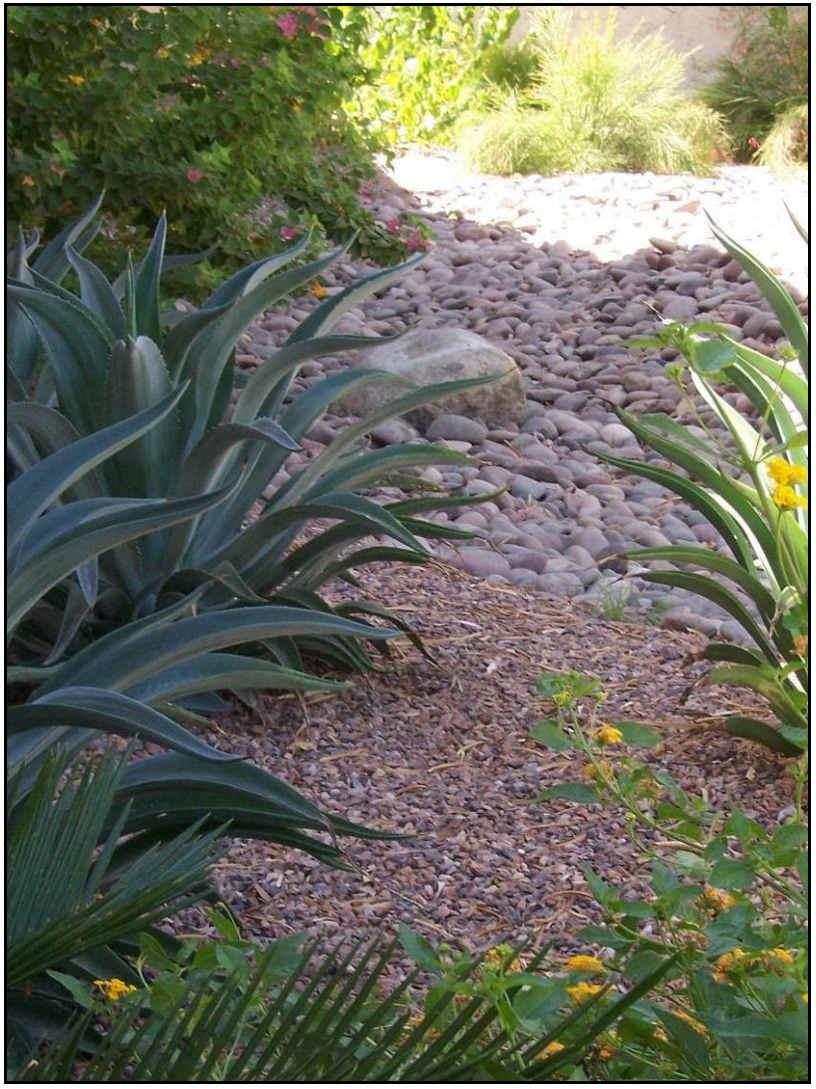
(5) Inorganics

So much of what characterizes the natural desert landscape is the rugged contrast of plant life against inert rocks, boulders, and sandy soils. Nature's placement of these boulders and their natural decomposition also plays a role in reflecting heat away from plant roots.

Unlike tropical environments where plant materials completely cover and smooth out most small topographic features, the natural designs of the desert leave landforms, surface colors and textures clearly exposed. Natural features include dry streambeds, dunes, eroded ridges, and rock outcroppings.

Since most grading plans include drainage swales, they can be incorporated as dry streambeds. By combining streams and mounds of varying sizes, landscapes can be divided into three to five sections where other contrasting elements can focus attention.

Since desert landscapes inherently involve fewer plants (which initially are very small) and large areas of open unplanted space, every aspect of the design must contribute interest and diversity to the overall plan.



Inorganic materials, including cobble, boulders, and pea gravel, are used here to create a dry streambed that is actually a drainage swale.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(5) Inorganics continued

Natural vs. Artificial Placement

The native desert-scape inherently involves fewer plants and large areas of open unplanted space. These elements have a random natural placement that is neither symmetrical nor predictable.

Natural placement is the consequence of natural systems and forces such as gravity, erosion, and water.

Artificial design follows a deliberate symmetry, a pattern imposed by human aesthetics. This type of design contradicts the native desertscape and imposes an artificial order on the landscape.

The natural placement of well-chosen inorganic material helps to create a landscape design that serves as a visual oasis.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(5) Inorganics

Color enhancement and harmony

The purpose of utilizing cobble and decomposed granite as a decorative element is to stabilize sandy soils and to assist surface water to drain rather than evaporate from the soil's surface. Shape and color choices create contrasts that can be complementary and further the aesthetic and sustainable intent of a landscape design.

It is recommended that color choices be made congruent with natural soil colors. However, there are places in the desert where darker inorganic materials occur. These darker colors can provide bright contrast with succulents. Such colors would be considered on a case by case basis and approved for their aesthetic functionality.

Harmony is achieved when the designer is mindful of stone and cobble shapes and the source of their formation in nature. Generally speaking, round stones are river-formed while jagged-edged rocks are formed by the natural decomposition of fragments in a dry environment. Utilizing river rock is acceptable when the design adheres to an arroyo theme, for example.

The colors of cobble and boulders harmonize in this median, and are consistent with the color of native soils in the area.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

A. Design Criteria (continued)

(5) Inorganics continued

How to achieve acceptable levels of inorganic materials

- A variety of rock sizes, from fine decomposed granite to cobble and large boulders, adds interest to open unplanted areas without consuming any water.

- Utilize decomposed granite (DG) to add a variety of colors, and textures and to stabilize fine, dusty, native soils.

- DG ranges in size from course sand to 3/8" minus with 11% fines. Colors should incorporate a variety of compatible earth tones.

- Since a goal of all desert design is to minimize heat gain, lighter shades should predominate. Large gravel (2-3 inches) can be mixed in to accentuate topographic variety. Rounded gravel and cobble (2"-12") are appropriate in streambeds.

- Large sharp edged rocks (8"-24" or larger depending on size of garden area) can be grouped on top of mounds to simulate exposed outcroppings.

- Decomposed granite needs to be wetted and compacted during installation to properly stabilize native soils. This process should be specified on submitted plans.

- Bury the bottom third of boulders below grade so that they appear to have been pushed up from the desert floor, rather than perched on top of it.

- Plant material should be planted next to – but not in -- cobble areas to decrease maintenance costs.

This design uses decomposed granite and a variety of rock sizes. The larger boulders are partially "sunken" into the soil, which creates the look of a landscape that has evolved over time, rather than one that was artificially imposed.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

B. Plant Materials

Plant material used in landscape design is limited only by the creativity of a designer. The City does not prescribe a fixed plant palate; instead selected plant material is reviewed for appropriateness in its proposed location.

The City will evaluate the appropriateness of plants for use in a design by considering sustainability and location.

Sustainability: Sustainability refers to how the plant material can and will be maintained over the course of its life. Plant species selection will be judged based upon plants' characteristics including:

- The Pruning needed for sustained, healthy growth
- Susceptibility to pest problems
- Invasive root development
- Weak limb and stem attachment
- Invasive growth and reseeding

Proper design allows adequate space for mature shrub development and root expansion. There is also space around each shrub to allow access for seasonal pruning.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

B. Plant Materials (continued)

Location: Locating plants for optimal health and minimal maintenance is essential to good design. Plant location should be selected while giving consideration to other components or conditions on site. The right location will encourage development of root systems and canopies that will be visually appealing and protect both the plant and its surroundings for years to come. In other words, allow enough growing space for the plant material to grow to mature size below, at, and above ground level. Specifically, plant location should be responsive to these site components and conditions:

- Below Grade – Utilities, footings for buildings, walls and fences, sidewalks, patios, and drainage structures, such as piping and dry wells.
- At Grade – Soil conditions (compaction), topography, drainage ways, catch basins. And hardscape features such as decorative paving.
- Above Grade – Overhead utilities, building canopies and awnings, structural features, and shade.

Above: Trees should be located where they have room for the full canopy to develop without conflicting with utilities, as shown here, or with buildings or other plant material.

Left: Good design accounts for potential conflicts: below ground with the roots of this shoestring Acacia; with the shrubs at ground level; and with the building's decorative canopies above ground.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

B. Plant Materials (continued)

(1) Trees

Trees are highly regarded for their environmental and aesthetic value. Adequate site space must be available for mature tree canopy and root development. When locating trees in a landscape design, be aware of potential conflicts with buildings, overhangs, proximity to walls, and planter size. The minimum planter size is 6 feet by 8 feet, or 48 square feet, of exposed soil surface. Long, rectangular planters with a 5 foot width maybe considered, depending on the species of tree. Care should be taken as to the amount and character of plant material placed under trees. Placing trees that shed large quantities of leaves and flowers, or that have insect problems resulting in honey dew production, next to walks and cars is not recommended. Palms placed in groups must leave room for mature frond development and for maintenance activities. The recommend minimum tree container size for planting is a 24 inch box. In some situations, a 15-gallon container may be approved.

Proper sizing of planters and careful selection of plant material that goes beneath a tree will enhance the long-term health and beauty of the landscape design.

(2) Shrubs

Shrubs are used in the landscape as screens, an understory and foundational planting, as edge materials, and for color appeal. To work effectively, they must have adequate site space for mature canopy and root development. Most shrubs require some form of pruning, which requires that space be preserved around them for access.

IV. Part One: DESERT LANDSCAPE DESIGN PRINCIPLES

B. Plant Materials (continued)

(3) Groundcover

City of Palm Desert defines groundcover as prostrate (horizontal) plant material, excluding turf grass species. Groundcovers are valued for their ability to provide color and greening, mitigate soil erosion, improve water infiltration, and provide refuge for other species, thereby promoting biodiversity. As with shrubs, groundcover should be spaced to provide adequate room for growth without crowding.

(4) Turf

The use of turf in the City is based on function, not aesthetics. Play areas, sports and athletic fields, and parks are examples of functional uses of turf. If turf areas are used in a design they must be set back 24 inches from hardscape areas to minimize nuisance water runoff.

The use of a variety of types of groundcover prevents soil erosion and blowing sand, while providing color and interest to a long embankment.

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V. Part Two: DESIGN PROCESS

A. Site analysis

(1) Topography

Project site topography is the first item to analyze in planting design. Slopes, natural swales and hillsides must be considered for successful plant development and even irrigation. The flatness of a site should be regarded a design feature that might present challenges.

(2) Light/Shadow

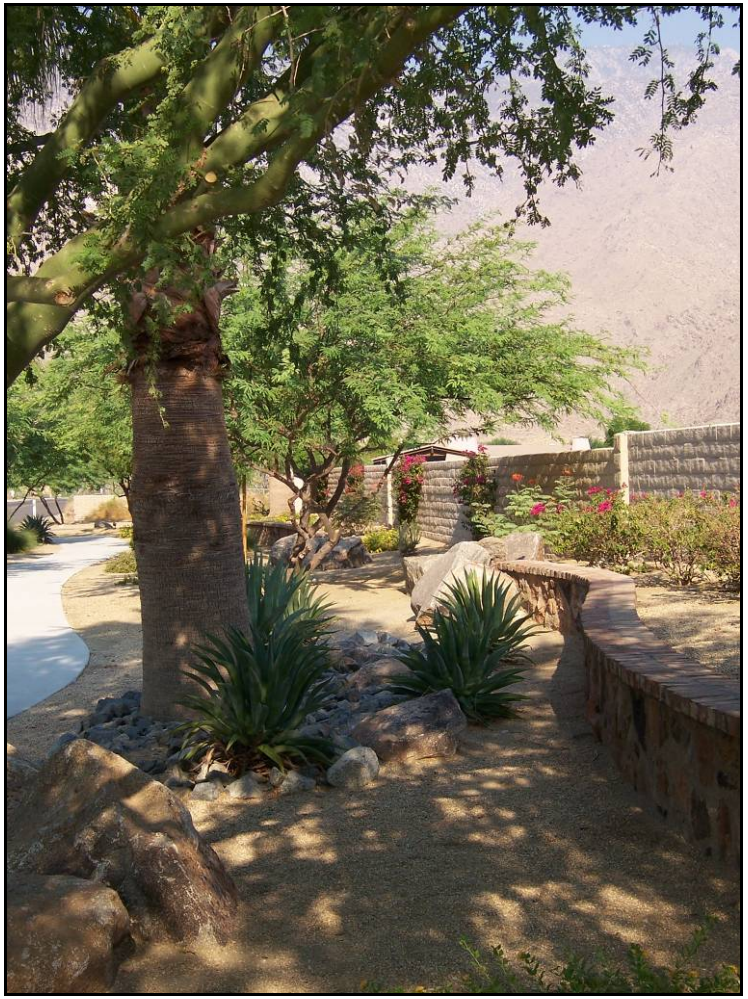
A site's orientation of a site with respect to the sun and the amount of light that plantings will receive must be studied prior to plant material specification. Most local nurseries will be able to assist in the selection of plants that can sustain exposure to sun and heat due to the site's orientation.

(3) Wind

A site's exposure to high winds should influence design elements such as screens and windbreaks. Delicate plant material is discouraged if area winds are too strong to allow plants to flourish. (See additional information in the Appendix.)

(4) Infrastructure

The project site infrastructure must be shown in the plans. Allowances for existing and proposed underground and above ground features will determine what can be planted.



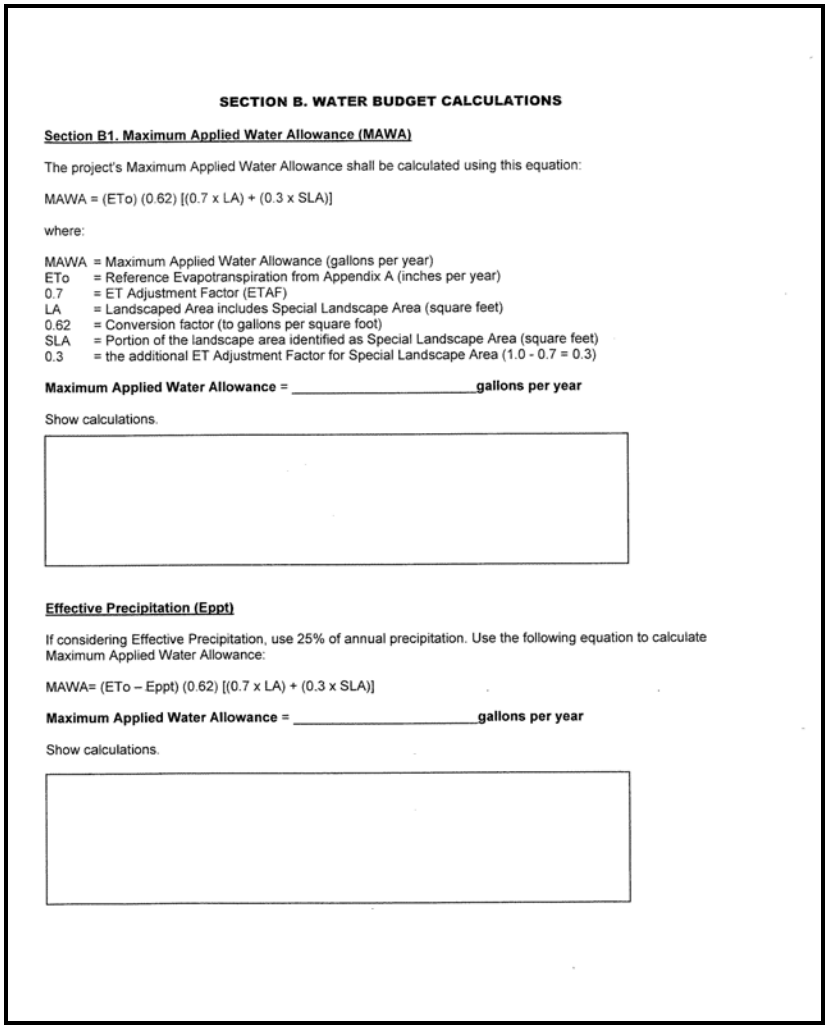
This landscape design employs a low retaining wall and boulders to accommodate the natural topography, and creates visual interest with the play of sunlight and shadows.

V. Part Two: DESIGN PROCESS

B. Water Calculations

(1) Water Conservation in the design process

The City's Water Efficient Landscape Ordinance requires that water conservation be the cornerstone of design criteria. The type and number of plants chosen will determine if the design will meet the ordinance's water conservation criteria. Therefore, any design must be built around plant water use. If turf is desired, then low and very low water use shrubs and trees should be used to meet the required water use criteria. Conversely, if the design employs moderate and high water use shrubs, then turf use may be limited or excluded from the design. See Chapter 24.04 of the City's Municipal Code for additional information.



SECTION B. WATER BUDGET CALCULATIONS

Section B1. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:

MAWA = (ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)]

where:

MAWA = Maximum Applied Water Allowance (gallons per year)
ETo = Reference Evapotranspiration from Appendix A (inches per year)
0.7 = ET Adjustment Factor (ETAF)
LA = Landscaped Area includes Special Landscape Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.3 = the additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7 = 0.3)

Maximum Applied Water Allowance = _____gallons per year

Show calculations.

Effective Precipitation (Eppt)

If considering Effective Precipitation, use 25% of annual precipitation. Use the following equation to calculate Maximum Applied Water Allowance:

MAWA= (ETo – Eppt) (0.62) [(0.7 x LA) + (0.3 x SLA)]

Maximum Applied Water Allowance = _____gallons per year

Show calculations.

Water calculation worksheets will assist a designer in determining hydrozones, estimating maximum allowable water, and estimating water use for a landscape design. They will also be used by the Coachella Valley Water District to verify compliance with governing regulations.

V. Part Two: DESIGN PROCESS

B. Water calculations continued

(2) Irrigation Design

All irrigation designs will be reviewed by City and Coachella Valley Water District staff for compliance with the City's and District's Water Efficient Landscape ordinances. All designs must account for the water use characteristics of plant material. All turf, shrubs and trees with similar water use characteristics are required to be grouped together in hydrozones and be valved together.

All plant material should be irrigated by a drip system, except large turf areas. Irrigation controllers should be able to automatically adjust the irrigation schedule according to weather changes ("smart" capability). Soil moisture sensors can be used to meet the "smart" capability requirement.

During construction, flags are used to locate future plant material (above) so that it is coordinated with the drip irrigation system to minimize water waste. A programmable controller (below) adjusts the amount of water used according to outdoor temperature and seasonal needs.

VI. Part Three: CITY APPROVAL PROCESS

A. Landscape plans that require City approval

- New and retrofitted commercial and industrial projects
- Multi-family projects
- Common areas and model home yards of planned residential developments.
- Individual private residences with landscape areas greater than 5,000 square feet.

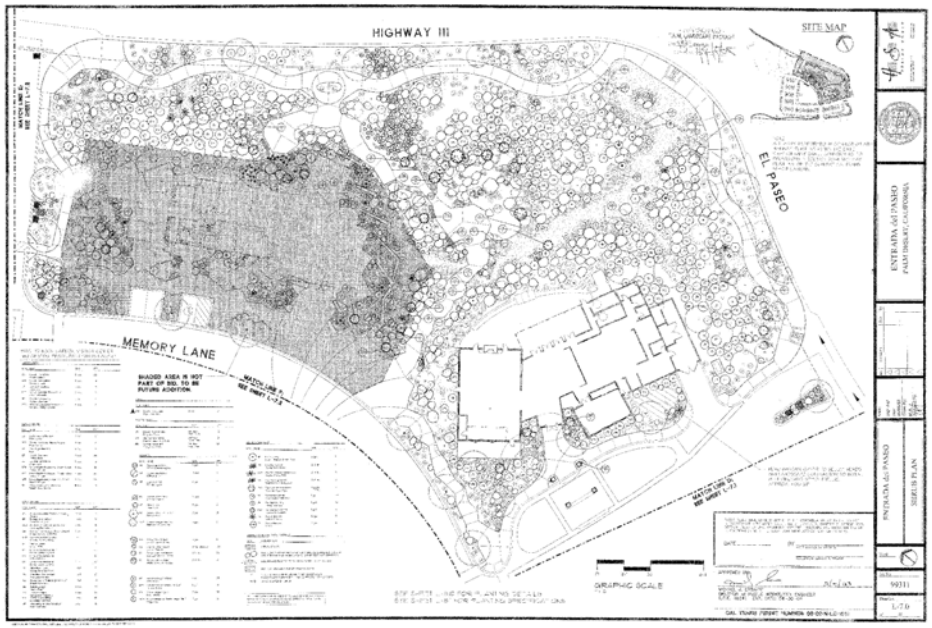
B. Types of Landscape Review

There are two types of review that the City applies to landscape design projects, ministerial and discretionary.

"Ministerial" review does not require a public hearing, and is administered internally by City staff through a plan check process. It is frequently accomplished "over the counter" while the applicant is present..

"Discretionary" landscape review is for larger projects and requires a public hearing. A flow chart illustrating the typical sequence of steps is included in the following pages of this section.

Both review processes require approximately the same level of information. Submitted plans that are legible and that supply the required information will ensure an easier approval under both types of review. Submittal requirements are listed on the following page.



When approved, the landscape plan for a project requiring discretionary approval will have the stamps of the City's Landscape Manager, the Coachella Valley Water District, and the Agricultural Commissioner.

Special thanks to Chuck Shepardson at HSA Design Group for the use of this plan, both here and on the cover of this manual.

C. Required Submittals for Both Discretionary and Ministerial Review

A preliminary landscape plan is typically submitted first. Once approved, a complete Landscape Documentation Package complying with the City's Water Efficient Landscape Ordinance (Chapter 24.04) is submitted. One set of preliminary landscape plans must be submitted to the Public Works Department concurrently with grading plans. Preliminary landscape plans must include, at a minimum, the following:

(1) Cover sheet

(A) Vicinity map
Sheet location map or sheet "key" if several sheets or phases are involved
Scale

(B) Project Data
Square foot area of project
Zone

(C) Title Block
Project name and number
Date of plan issue and/or submittal date
Address of the project
North arrow
Name of the landscape architect designer

(2) Design Sheets

(A) Site Plan
Same title block information as cover sheet
Scope of work (existing vs. proposed)
Building footprints
Walls, fences, retaining walls, monument signs, etc.
Hardscape, pedestrian and vehicular paths

(B) Planting Plan
Same title block information as cover sheet
Plant specifications
Size containers
Quantity
Species: botanical and common name
Availability
Symbol legend
Square footage each of: turf, shrubs, and total landscape area (distinguish between off-site and on-site)

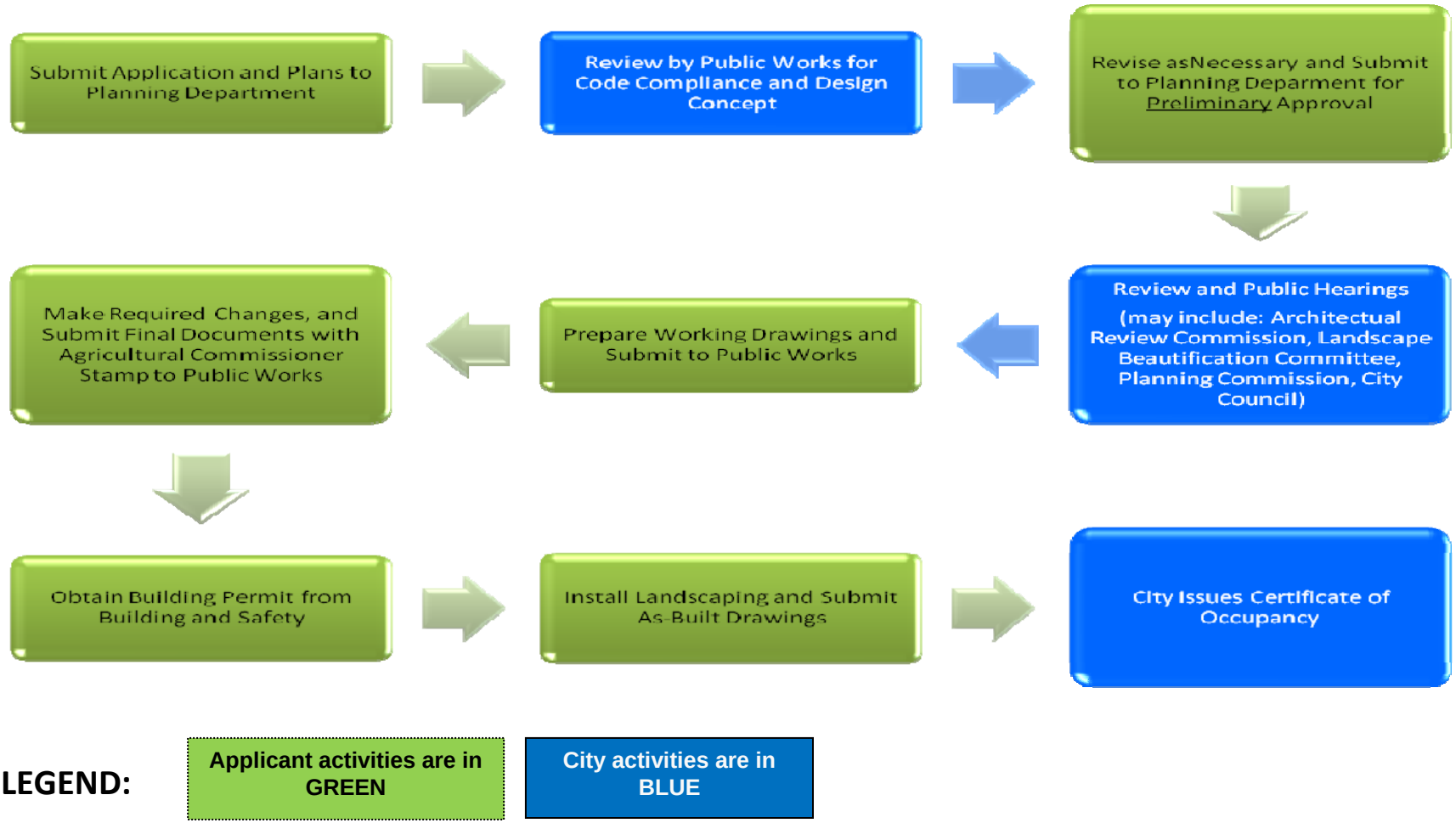
(C) Irrigation Plan
Sleeving under hardscape

(D) Grading Plan

VI. Part Three: CITY APPROVAL PROCESS

D. City Approval Process Flow Chart

The flow chart below outlines the steps by which a landscape design is submitted, reviewed, and approved by the City of Palm Desert in instances wherein the City has the authority for discretionary review. In situations where the review is ministerial (for single family homes, for instance), the review process is greatly simplified and can often be accomplished over the counter.



VII. Part Four: APPENDIX

A. Palm Desert Environment

(1) Temperature:

The City of Palm Desert is located in the Coachella Valley, a region characterized by mild winters and hot summers. Day to night temperatures can fluctuate more than 30 degrees. Summer plants can be exposed to temperatures as high as 122˚ F. Winter temperatures can be as low as 13˚ F, with an average winter low of 42˚ F. The City is located at elevations that extend from 224 feet above sea level to over 1,000 feet. This extensive range includes a variety of landforms and conditions including foothills, sloping alluvial fans, the Cove, sand dunes, and a low plane.

(2) Soils:

There are four basic soil types within the City of Palm Desert. Rocky soils and decomposed granite predominate on alluvial fans along the slopes of the mountains. In the northern part of the City, soils tend to be sandy. These three soil types are typically fast draining and have limited water-holding capacity. In the plane between the sand dunes and the foothills, the soil is generally a tight, silty loam, which is very compact and requires special attention to ensure proper drainage. All native soils contain very little organic matter.

This sandy soil is typical of the area. It is fast draining and has very little organic matter

VII. Part Four: APPENDIX

A Palm Desert Environment (continued)

(2) Soils (continued)

Desert soils are quite different from the loam or clay soils found in other regions. Because they are fast-draining, people new to the region must learn different watering cues and habits. Here, the plants themselves, rather than the water pooled on the soil surface, provide the best indication of when water is needed.

(3) Precipitation

The City of Palm Desert receives, on average, only 3.5 inches of rain per year. Much of this rain falls during intense summer thunderstorms, locally called *Chubascos,* which can result in gully-washers and flash floods. Rather than attempting to use this summer rainfall by directing it to plants in the landscape, it is more prudent to move the torrent *through* the site to minimize damage.

With such meager rainfall, supplemental irrigation is a necessity for all landscapes, even those comprised of native desert plants. This is especially true of new plantings. However, in some years sufficient autumn rainfall triggers brilliant displays of spring wildflowers, found in the Cabazon Pass and throughout the Coachella Valley. In such years, it is easy to see colorful displays of wildflowers along roadways in undeveloped areas, carpeting the sand dunes and covering vacant lots.

VII. Part Four: APPENDIX

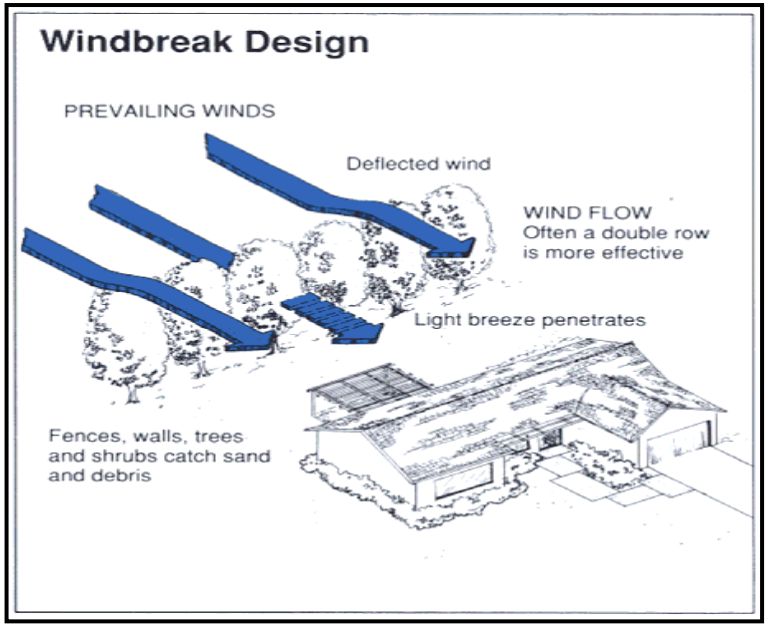
(4) Wind

Winds are most prevalent in Palm Desert during late winter and spring. They typically come through the San Gorgonio Pass and fluctuate with the changing pattern of westerly storms and coastal weather conditions. Winds tend to follow the natural course set by the Whitewater River Channel and are most pronounced in the northern part of the City. Thermal low-pressure systems formed in the low desert by rising hot air draw winds down through the pass. This condition is most common when desert temperatures are much warmer than coastal temperatures.

Winds desiccate (dry-out) plants and can threaten a landscape's survival. Winds do more than draw moisture from plants. Once they reach a velocity of 25 to 30 miles per hour, dust and sand begin to move. At 30 to 40 miles per hour, a dust storm may develop. It is not uncommon for winds to top 60 miles per hour, which can cause severe damage.

Windbreaks can be placed strategically in the landscape to buffer the effects of wind, blowing sand, and dust. The illustration (right) provides some guidelines for planting to reduce wind velocity. Wind is a particular concern to landscapes in the northern portion of the City where soils are sandy and the velocity tends to be the greatest.

Care must be taken in the selection of plant material for a windbreak. Selected plant species must be able to withstand the effects of wind and provide the desired protection, but should not have an invasive growth habit.



VII. Part Four: APPENDIX

(5) Water

Landscapes in the City of Palm Desert appear lush and green, but with rainfall averaging 3.5 inches per year, rain alone would support only a sparse scattering of native plants. With irrigation, however, the desert springs to life. Water is the essential ingredient to develop and maintain plant life.

Water is supplied to the City of Palm Desert by the Coachella Valley Water District (CVWD), a water agency that serves the southern portion of the Coachella Valley. Farms in the region receive water for irrigation from a separate source, the Coachella branch of the All American Canal, a canal system that brings Colorado River water to the Imperial and Coachella Valleys.

The City's drinking water is supplied by a separate source - a large aquifer (a natural underground water storage area) deep under the Coachella Valley. Deep wells tap water of excellent quality for domestic use, including landscaping.

(5) Water (continued)

The Desert Water Agency (DWA), the water district that serves the western portion of the Coachella Valley, and the Coachella Valley Water District (CVWD) are contractors for the State Water Project. This entitles each agency to an annual allotment of State Water Project water.

Because there is no canal or pipeline linking the Coachella Valley to the State Water Project, the CVWD and DWA trade their allotment of state water, gallon for gallon, for Colorado River water.

During wet years, Colorado River water is funneled into large, shallow ponds in the northern Coachella Valley. These ponds filter the water and allow it to percolate into the underground aquifer. This is known as *recharge.* When the Colorado River is running high, the CVWD and DWA take additional water for future allotments.

During drought years water is not taken. It is through this process that the underground aquifer is recharged and its depletion is minimized.

The average five member household in the Coachella Valley uses one acre-foot of water, or 325,850 gallons, per year. This equals more than 892 gallons per day. Of this water, as much as 70 - 80 percent is used to irrigate lawns and landscape plants.

VII. Part Four: APPENDIX

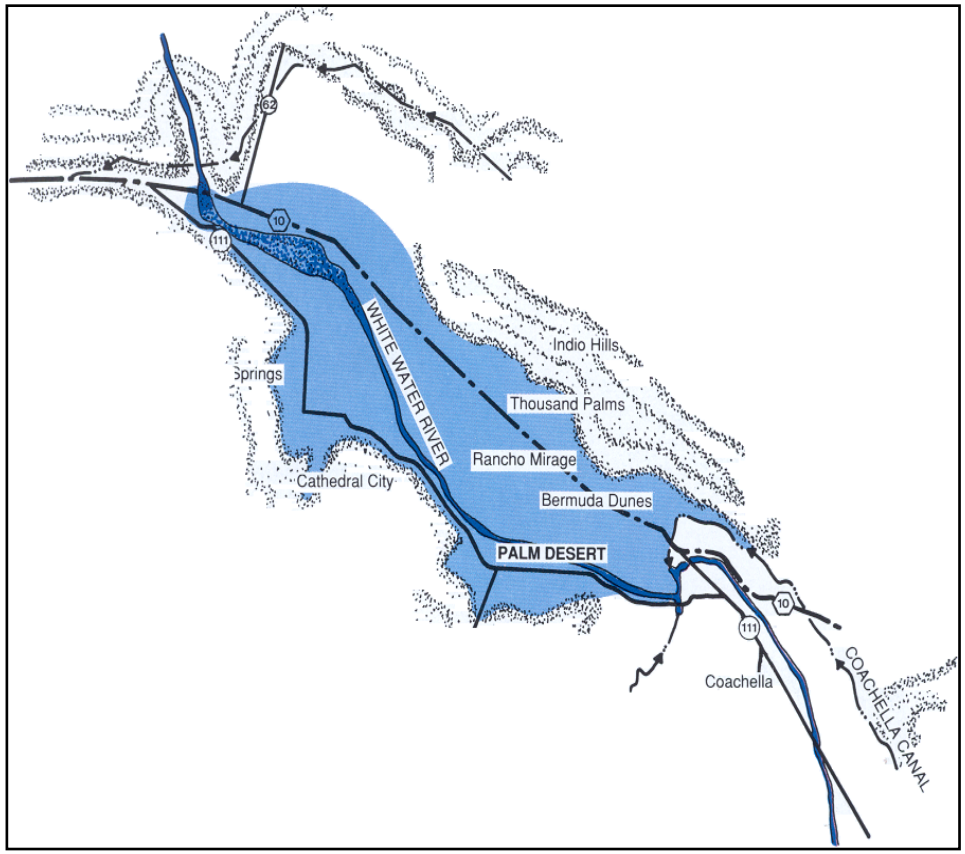
(5) Water (continued)

The CVWD estimates that by adopting a water-efficient landscape, the average family could cut their water use (and water bill) in half. A tiered water rate pricing system has been put into place to encourage property owners to conserve this precious resource.

As previously mentioned, the Coachella Valley gets most of its water from an aquifer, the remnant of a prehistoric lake that receded underground as the climate changed from wet subtropical to arid desert. Local rainfall and mountain snows were no longer sufficient to maintain the lake and surrounding lush subtropical environment. An attempt to recreate that lush environment by pumping or mining the prehistoric underground reservoir will ultimately drain it entirely, leaving nothing for future generations.

Residential and commercial landscape design must recognize and accept both the constraints and unique opportunities present in a hot, dry environment where every drop of water is precious.

Currently all the waste water produced in the Coachella Valley is recycled. However, the population of the Coachella Valley does not supply enough wastewater to be recycled to meet the irrigation needs of the region's many golf courses. The addition of a water line (Mid-Valley pipe line) connecting Colorado River water from the American Canal with the CVWD reclamation plant in Palm Desert will allow these two sources to mix, providing better quality water that will serve more golf courses. This line will also decrease dependence on the aquifer and slow its depletion.



VII. Part Four: APPENDIX

(5) Water (continued)

California Irrigation Management Information System (C.I.M.I.S.)

Many golf courses, parks and greenbelts maintained by homeowner associations have their irrigation systems linked by computer to the California Irrigation Management Information System (C.I.M.I.S.). Managed by the Department of Water Resources in Sacramento, this computer-operated system calculates and informs the public as to the day's *evapotranspiration* (ET) rate for selected regions in California. Evapotranspiration is the water lost through evaporation from the soil and transportation from plant tissues.

The ET rate is the amount of moisture a plant needs to survive. By knowing the ET rate, you can supply plants with the precise amount of water they require, avoiding wasteful overwatering. The Coachella Valley has multiple reporting stations to help ensure accuracy. The system is available to everyone via the Internet at wwwcimis.water.ca.gov/cimis/welcome.

For more information on current weather, call CVWD's weather report at (760) 398-7211.

VII. Part Four: APPENDIX

B. Installation

The City and CVWD have specific criteria for plant installation. Both sets of criteria can be found on each agencies website as follows; www.cityofpalmdesert.org and www.cvwd.org.

C. Maintenance

The success of a landscape, whether measured by its beauty, longevity, or sustainability is a result of appropriate and efficient maintenance. A well maintained landscape is achieved through sound horticultural practices. Unfortunately, there are a large number of maintenance activities employed by professionals and homeowners that actually harm the health and beauty of a landscape design. To this end, the City has produced its Desert Flora Maintenance guide publication. This publication provides information on proper maintenance techniques for desert shrubs and trees, as well as related procedures to maintain the health and beauty of a desert style landscape.

In the Coachella Valley, it is common practice to over seed Bermuda grass turf with rye grass during fall months. This process has a significant negative impact on the air quality during over seeding season. To mitigate this impact, the City requires the use of the Smart Scalping process as developed by the Coachella Valley Association of Governments. This process is described in "Promoting Healthier Grass Re-seeding, Options for the Coachella Valley," which is available on-line at www.cvag.org.

Proper pruning techniques are key to the health of your trees and shrubs.

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D. Irrigation

A wide variety of irrigation products are available today. In general, two kinds of irrigation systems are used: *drip irrigation* and *spray irrigation.* In some instances, both types may be used on a single project. However, spray systems are only approved for turf. Each type of system has advantages and proper uses.

The Coachella Water District offers excellent and valuable information on the design, installation, maintenance, and scheduling of irrigation systems. This information can be found in its publication "Lush and Efficient," which is available on-line at www.cvwd.org under the Conservation & Education and Conservation tabs.

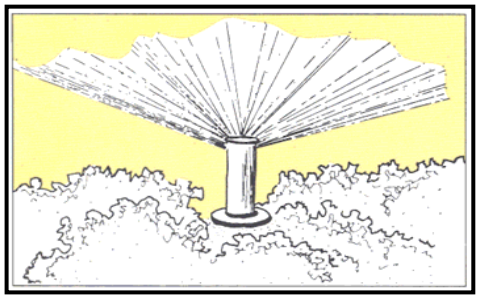
Drip irrigation minimizes water use by focusing delivery of the water to the exact point where it is needed by the plants.

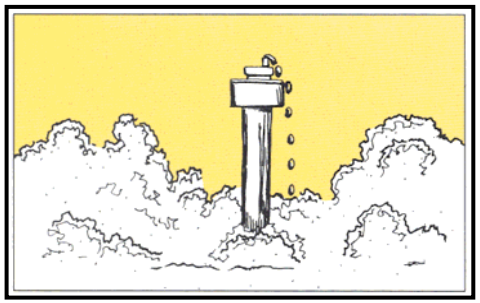
D. Irrigation continued

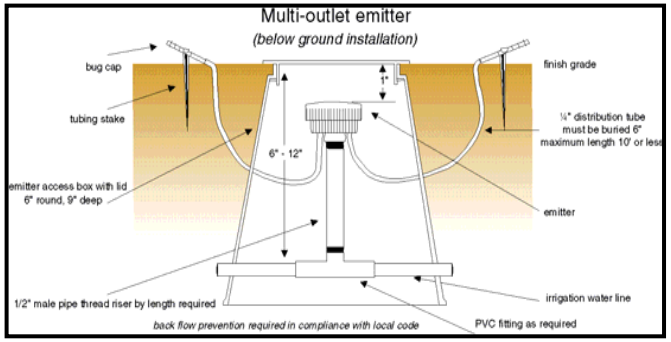
If you plan to install an emitter system, the filter and pressure regulator are critical pieces of equipment. When a filter becomes clogged with dirt or debris, water is not applied evenly, or sometimes at all. Self-flushing valves are available to help alleviate this problem. The pressure regulator can be adjustable or static and should be between 15 to 30 psi of pressure.

Of the many types of emitter systems available, multiport outlet devices using "spaghetti" tubing are less desirable and not approved in the City, because the equipment rests directly on the soil surface where animals, maintenance activities, and foot traffic can easily damage or move it.

Rigid PVC pipe is preferred, but in some applications, consideration will be given to buried, flexible polyethelyne pipe. Only schedule 80 and ¼" polyflex risers are acceptable







E. Green waste / Soil Amendments

Green waste is the byproduct of the plant pruning process. In years past, green waste was regularly disposed of in landfills. This created significant and adverse environmental issues and now California law requires that green waste be diverted from landfills and composted for use as a soil amendment.

Composting is the process of recycling green waste into beneficial organic soil amendments and mulch using natural decomposition. It can be done on a small scale by individual home owners, or at a large composting facility. The Riverside County Master Gardner program provides training and information on backyard composting.

Soil amendments improve soil and plant health and conserve water. Organic mulch also improves soil and plant health, conserves water, and cools summer soil temperatures. Any soil amendments and organic mulch used in landscape installation and maintenance must come from locally recycled green waste.

Green waste that is delivered to the compost facility here….

…is turned into high quality mulch to be used at another location.

VII. Part Four: APPENDIX

F. List of City Landscape-Related Ordinances

The following citations represent places where landscape-related provisions, regulations or requirements appear in the City of Palm Desert Municipal Code.

Title 2 Administration and Personnel
- 2.68 Art in Public Places Commission
  - 2.68.020 Membership

Title 3 Revenue and Finance
- 3.40 Parking and Business Improvement Area
  - 3.40.050 Charges

Title 5 Business Taxes, Licenses and Regulations
- 5.95 Landscape-related business
  - 5.95.010 Landscape-related business

Title 8 Health and Safety
- 8.20.020 Unlawful property nuisances
- 8.70 Property maintenance
  - 8.70.190 Vegetation, landscaping
  - 8.70.330 Water management for existing landscapes

Title 9 Public Peace, Morals and Welfare
- 9.24 Noise Control
  - 9.24.075 Property maintenance activities

Title 12 Street and Sidewalks
- 12.32 Tree Pruning Regulations
  - 12.32.040 Standards

The following code sections include landscape related requirements that must be met and should be referenced when submitting plans.

VII. Part Four: APPENDIX

F. List of City Landscape-Related Ordinances (continued)

Title 24 Environment and Conservation

- 24.04 Water-efficient landscape
  - 24.04.010 Purpose and intent
  - 24.04.050 Landscape construction documentation package
  - 24.04.060 Water conservation concept statement
  - 24.04.080 Planting design plan
  - 24.04.090 Irrigation design plan
  - 24.04.100 Irrigation schedules
  - 24.04.110 Maintenance
  - 24.04.120 Landscape irrigation audits
  - 24.04.130 Grading design plan
  - 24.04.140 Soils analysis
  - 24.04.150 Certifications
  - 24.04.160 Public education
  - 24.04.170 Water management for existing landscapes
  - 24.04.190 Fees for initial review and program monitoring
  - 24.04.200 Enforcement and penalties

- 24.16 Outdoor lighting requirements
  - 24.16.040 Definitions
  - 24.16.060 Light trespass
- 24.20 Stormwater Management and Discharge control
  - 24.20.050 Discharge of pollutants

- 24.30 Energy Efficiency Standards
  - 24.30.030 Mandatory requirements

VII. Part Four: APPENDIX

F. List of City Landscape-Related Ordinances(continued)

Title 25 Zoning

25.15.010	Purpose
25.15.060	Architectural and landscape design
25.16.120	Private tennis courts and sports courts
25.23.100	Design criteria
25.24.090	Design review of project
25.28.140	Special standards
25.56.195	Standards for walls and fences for single-family residential lots in the R-1, R-2, R-3, and PR zone districts
25.58.100	Landscaping requirements
25.58.120	Tree requirements
25.58.123	Parking lot tree maintenance and installation requirements
25.58.122	Parking lot tree irrigation requirements
25.58.370	Definitions
25.58.130	Landscape and irrigation system plan review
25.68.335	Directional signs for courtyard or plaza businesses
25.72.020	Application—Submittal requirements
25.73.013	Approval or rejection considerations
25.104.010	Purpose and intent
25.120.090	Applications for condominium conversions

VIII. Part Five: GLOSSARY

Accent Plants: A plant of special interest that is usually part of a larger planting. Accent plants provide interest throughout the seasons through specific forms, textures, colors, etc.
Aesthetics: The visual quality or attractiveness of a landscape design.
Annual Gardens: Gardens that need to be replanted each year because the plants do not thrive through all seasons. Annuals are frequently chosen for their intense flowering and often become focal points in the landscape.
Balance: Balance refers to the relationship between elements in the landscape. Balance can be formal or informal. Formal balance is usually created by landscape designs with one side a mirror image of the other. Informal balance occurs when plant sizes and numbers are only relatively similar on both sides.
Base Map: A drawing that incorporates all of the information collected about the landscape and provides the basics to be used in the landscape design process.
Border Planting: A plant or plant grouping that divides spaces in a landscape or between adjacent properties.
Bubble Diagram: Bubble diagrams consist of a series of circles or rounded shapes drawn on paper to show what the areas in the landscape will be used for. The areas can represent a turf area, a shrub border, a perennial garden, a dog kennel, etc.
Common Grounds: Common grounds usually surround a business, condominium complex, or apartment building. Often, there is a supervisor or homeowner association committee established to govern decisions about the landscape. Landscape maintenance firms or a department within the firm maintain the grounds.
Completed Landscape Design Plan: A completed landscape design in plan view (bird's-eye view). This plan has all the information necessary to install the landscape.
Conceptual Plans: Initial drawings of how the spaces in the landscape will appear. Conceptual designs lack details, water use calculations, and specifications.
Draft Design: Preliminary designs consisting of key plants as well as groupings of plants and inorganic materials (boulders, cobble, etc.) shown with a proposed plant palate.
Easements: An interest in land owned by another that entitles its holder to a specific limited use or enjoyment.
Elements of Design: Criteria used in selecting plant materials and inorganic materials and organizing them into the landscape. The designer must consider both primary and secondary designs elements.
Elevations: The way in which we see a landscape or an area if we are standing and looking at it from ground level. Elevations on a plan help the client visualize how the installed landscape will appear.

Emphasis: Major landscape components are highlighted more than less important ones. Framing, plant quantities, and creating unusual focal points are examples of using emphasis in the landscape.
Environmentally Sound: A landscape that does not harm the environment, soil, water, and air. An environmentally sound landscape is less dependent on pesticides, fertilizer, and water to maintain the desired appearance.
Form: The outline a plant creates as well as the three dimensional features it produces (columnar, round, vase, weeping, oval, etc.). Form should be considered early in the design process.
Foundation Plantings: Plantings located in beds surrounding the base of a structure. Foundation plantings can be made continuously or in segments. They provide transitions adjacent to patio and entry gardens. They frequently contain several key plants.
Freestanding or Group Plantings: Plantings that are apart from a structure or other plantings. Sometimes called an island planting depending upon location.
Functional: Any part of the landscape with a specific purpose for its location other than aesthetics. Functionality is associated with landscape uses.
Hardscaping: Manmade features in the landscape. Examples include walks, fences, and retaining walls.
Implementation: The process of installing plant materials and hard-goods into the landscape. Landscape implementation is carried out according to the completed landscape design.
Inorganic Materials or Inorganics: All of the construction materials used to create structure in the landscape. Examples include boulders, coble, decomposed granite (D.G.), pavers, and fencing.
Key Plants: Landscape plants placed in a highly visible location. Key plants are frequently used individually or in small groups. They are often associated with the screening or softening of architectural features, such as building corners, steps, fences, etc.
Landscape: Area where plants, turf, decks, walks, etc., have been used to create an outdoor living area that makes the area functional and visually pleasing.
Landscape Architect: A State-licensed professional who plans and designs landscapes. Landscape architects are usually schooled in engineering and architecture and typically work on projects larger than residential properties.
Landscape Designer: A professional without state licensure who plans and develops landscapes, usually at a residential or small commercial level. Landscape designers are usually skilled in the use of plant materials and other horticultural aspects of landscape design.
Maintainability/Sustainability: Process of making every individual segment of a landscape as easy to care for as is possible. A maintainable landscape requires less labor, fewer supplies, and is less expensive to care for.

Mass Plantings: Plantings where many plants of the same species are used to fill an area.
Perennial Gardens: Herbaceous plantings that can tolerate all seasons and will come back each year. Perennial gardens provide seasonal interest for a longer period of time than annual gardens and can serve as focal points in the landscape.
Plant Groupings: Plant groupings provide a representation of the types of plants that will occupy an area once the landscape design is completed. A plant grouping might show a shrub border between properties or it may represent a perennial bed location.
Plan View or Plan View Drawings: Bird's eye view of the area being designed. The completed landscape design is shown in plan view.
Principles of Design: Process that defines and ties all individual components together to create unity within a design. Examples of principles of design would be simplicity, variety, balance, emphasis, sequence, and scale.
Scale: Scale is the relative size of one part of a landscape to another. Scale may be the proportion or ratio of size to other components in the landscape.
Screen Plantings: Plantings used to screen an area to provide privacy, block a poor view, or as a natural boundary or barrier.
Seasonal Interest or Color: The time of year that a plant provides a special characteristic such as flowers, fall color, fruits, etc. Color is the element that is often first noticed about a plant. Color is frequently used in a landscape to provide interest throughout the entire growing season. This is often referred to as seasonal interest.
Sequence: A gradual transition from one area to another within a landscape. A landscape with sequence has one element changing at a time rather than several changes at once. A landscape with a coarse textured plant next to a fine textured plant is an example of bad sequence.
Simplicity: Understanding what is important in a landscape design and what is not. Details that will not have a major impact to the landscape are omitted to keep it uncluttered.
Site Analysis: Compiling the information found during the site survey and the client interview for use in the development of the landscape plan.
Site Plan: A drawing that incorporates all of the information collected about the landscape and provides the basic landscape design. A site plan is usually drawn to scale, showing an entire legal parcel and its connection to the surrounding parcels or public right-of-way from a bird’s eye view.
Site Survey: Collecting site specific information that will aid the designer in the development of the completed landscape design. Examples include identifying soil type, drainage, structures, existing plants, and good and bad views.
Specimen Plants: Specimen plants can be part of a larger planting, but usually stand alone in the landscape. Specimen plants provide specific seasonal interest or color through flowers, fruit, or leaves.

Sustainable/Maintainable Landscape: A landscape designed, installed, and maintained in a residential, commercial, or public setting that is functional, maintainable, environmentally sound, cost effective, and visually pleasing throughout landscape's entire life.
Texture: Coarseness or fineness of the plant. Texture should be one of the first design considerations when placing plants in a landscape. Texture in plants can be created by leaves, branches, bark, and other plant parts. It can also be created by rough or smooth looking surfaces, thin or thick leaf set, and by darkness or lightness.
Trees: Woody plants that usually have one main stem and reach a height of at least 12 feet. Trees are very important for screening, framing, and shade, and are considered early in the landscape design process. Trees are usually placed before other plant material because of their major impact on understory shrubs.
Variety: Mixing up the form, texture and color combinations in a landscape to create extra interest without sacrificing design simplicity.
Visually Pleasing: A landscape having an overall desirable appearance. A beautiful landscape would also be considered a visually pleasing landscape.

IX. References and Links

City of Palm Desert Municipal Code
City of Palm Desert Flora
City of Palm Desert Maintenance
http://myvisionscape.com/resources/Glossary_of_Landscape_Terms